

Appl. No. 10/727,907
Amdt. dated June 20, 2006
Reply to Office Action of March 23, 2006

Docket No. A01327

AMENDMENTS TO CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A coating composition comprising a multi-stage emulsion polymer that is both radiation curable and removable and includes carboxylic ~~chemically reactive~~ functional groups in the coating that react with one or more chemical stripping agents, effecting the removal of the coating from a substrate, wherein the shell of said multi-stage emulsion polymer comprises a carboxylic acid-containing emulsion polymer that comprises, as polymerized units, one or more comonomers having carboxylic acid functionality,
wherein said multistage emulsion polymer further comprises 5 to 80 percent, based on equivalents of acid groups, polyvalent metal ion.
2. (canceled)
3. (original) The coating of claim 1 wherein the UV curable, removable composition is included within one or more layers applied on top of a substrate.
4. (original) The coating of claim 1 wherein the UV curable, removable composition is included within one or more layers applied on top of a base coat, the base coat disposed on top of a substrate.
5. (original) The coating of claim 3 or claim 4 wherein the substrate refers to any surface that is vertical, horizontal or inclined upon which the coating is applied and is selected from the group consisting of flooring, wall, ceiling, tile materials, vinyl floor tiles, tiles coated with sealer or primer, ceramic tiles, wood, metal, concrete, marble, slate and simulated natural stone.

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6. (withdrawn) A method for applying a UV cured, highly cross-linked coating as one or more layers to a substrate and subsequently removing all coating layers from a substrate comprising the steps of:
 - (a) applying one or more layers of a coating comprising a curable, removable multi-stage emulsion polymer;
 - (b) curing the composition to form a highly cross-linked coating over the substrate by exposing the composition to ultraviolet radiation; and
 - (c) removing all coating layers from the substrate by exposing the coating to one or more chemical stripping agents.
7. (withdrawn) The method according to claim 6 wherein the curable, removable multi-stage emulsion polymer comprises, as polymerized monomer units (a) zero to 60 percent, based on weight of the polymer, of a mono-ethylenically unsaturated monomer containing a carboxylic acid functional group; (b) 1 to 80 percent, based on weight of the polymer, of a (meth)acrylic monomer containing functional groups selected from one or more monoethylenically unsaturated monoepoxides, glycidyl (meth)acrylate, allyl glycidyl ether, glycidyl cinnamates, glycidyl crotonates, glycidyl itaconates, glycidyl norbornenyl ester, glycidyl norbornenyl ether and other acrylate containing pendant vinyl groups; (c) 20 to 80 percent, based on weight of the polymer, of one or more (C1 C20)alkyl (meth)acrylate ester monomers; and (e) zero to 10 percent, based on weight of the polymer, of one or more other co-polymerizable monomers.
8. (withdrawn) A method for preparing a UV curable and removable multi-layer coating comprising (a) applying one or more layers of a base coat to a substrate wherein the base coat comprises a polymer product having a gel fraction of 0.3 to 0.95 in a solvent selected from one or more of acetone and tetrahydrofuran and wherein the base coat is applied in one or more separate applications, allowing the base to dry after each application; and (b) applying one or more layers of a coating comprising a curable, removable multi-stage emulsion polymer.

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9. (withdrawn) The method according to claim 8 wherein the curable, removable multi-stage emulsion polymer comprises, as polymerized monomer units (a) zero to 60 percent, based on weight of the polymer, of a mono-ethylenically unsaturated monomer containing a carboxylic acid functional group; (b) 1 to 80 percent, based on weight of the polymer, of a (meth)acrylic monomer containing functional groups selected from one or more monoethylenically unsaturated monoepoxides, glycidyl (meth)acrylate, allyl glycidyl ether, glycidyl cinnamates, glycidyl crotonates, glycidyl itaconates, glycidyl norbornenyl ester, glycidyl norbornenyl ether and other acrylate containing pendant vinyl groups; (c) 20 to 80 percent, based on weight of the polymer, of one or more (C1 C20)alkyl (meth)acrylate ester monomers; and (e) zero to 10 percent, based on weight of the polymer, of one or more other co-polymerizable monomers.
10. (withdrawn) The method according to claim 8 or claim 9 wherein the substrate refers to any surface that is vertical, horizontal or inclined upon which the coating is applied and is selected from the group consisting of flooring, wall, ceiling, tile materials, vinyl floor tiles, tiles coated with sealer or primer, ceramic tiles, wood, metal, concrete, marble, slate and simulated natural stone.
11. (new) The coating composition of claim 1, wherein said comonomers having carboxylic functionality are selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid, fumaric acid, citraconic acid, and mixtures thereof.
12. (new) The coating composition of claim 11, wherein said comonomers having carboxylic functionality are selected from the group consisting of acrylic acid, methacrylic acid, and mixtures thereof.

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13. (new) The coating composition of claim 1 wherein said multi-stage emulsion polymer further comprises a highly crosslinked core, and wherein said shell is reacted with a multifunctional monomer to provide a post functionalized shell having residual ethylenically unsaturated groups.
14. (new) The coating composition of claim 13, wherein said multifunctional monomer is selected from the group consisting of monoethylenically unsaturated monoepoxides, monoethylenically unsaturated amines, monoethylenically unsaturated diamines, monoethylenically unsaturated alcohols, and monoethylenically unsaturated polyols.
15. (new) The coating composition of claim 14, wherein said multifunctional monomer is selected from the group consisting of monoethylenically unsaturated monoepoxides.
16. (new) The coating composition of claim 15, wherein said multifunctional monomer is glycidyl methacrylate.
17. (new) The coating composition of claim 1, wherein said polyvalent metal ion is one or more polyvalent metal ion selected from the group consisting of zinc, calcium, magnesium, and zirconium.
18. (new) The coating composition of claim 1, wherein the amount of said polyvalent metal ion is 20 to 75 percent, based on equivalents of acid groups on said multi-stage emulsion polymer.

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19. (new) The coating composition of claim 1,
wherein said multi-stage emulsion polymer further comprises a highly crosslinked core,
wherein said shell is reacted with a multifunctional monomer to provide a post functionalized shell having residual ethylenically unsaturated groups,
wherein said multifunctional monomer is selected from the group consisting of monoethylenically unsaturated monoepoxides, monoethylenically unsaturated amines, monoethylenically unsaturated diamines, monoethylenically unsaturated alcohols, and monoethylenically unsaturated polyols, and
wherein said polyvalent metal ion is one or more polyvalent metal ion selected from the group consisting of zinc, calcium, magnesium, and zirconium.
20. (new) The coating composition of claim 1, wherein said chemical stripping agent comprises ammonia or an amine.